

Introduction and Metric Spaces

Functional analysis - part 1

Linear
algebra
 $\dim = \infty$

+

Real and complex
analysis

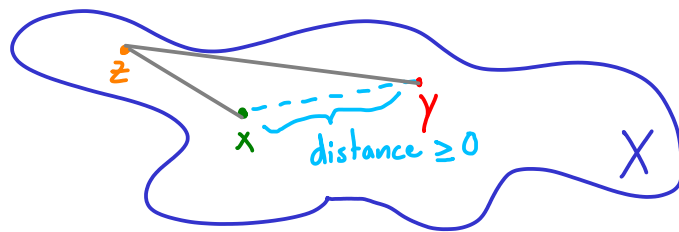
Functional analysis

(function spaces, sequences, ...)

= Study of topological-algebraic structures

Metric spaces

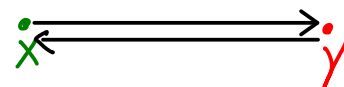
X set



a metric: $d: X \times X \rightarrow [0, \infty)$

$$(1) \quad d(x, y) = 0 \iff x = y$$

$$(2) \quad d(x, y) = d(y, x)$$



$$(3) \quad d(x, y) \leq d(x, z) + d(z, y) \quad (\text{triangle inequality})$$